

REMARKS/ARGUMENTS

Claims 1-5, 12, 18, 20, 23, 26-28 and 34 are pending. By this Amendment, claim 27 is amended. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

It is respectfully noted that claim 34 is not mentioned in the Office Action, as required by M.P.E.P. 707.07(i). It is also respectfully noted that claim 34 was rejected in the June 1, 2007 Office Action under 35 U.S.C. §102(b) over Bando (U.S. Patent 5,265,565). However, it is respectfully noted that the Office Action does not identify any portion of Bando as allegedly disclosing the features recited in claim 34, as is required by 37 C.F.R. §1.104(c)(2). It is respectfully submitted that Bando does not in fact disclose the features recited in claim 34 and that claim 34 is allowable.

It is respectfully noted that claims 1-5, 12, 27 and 28 are rejected under both 35 U.S.C. §102(b) and 35 U.S.C. §103(a). To the extent that it is the intention of the Examiner to reject these claims under both sections, it is respectfully submitted that, as set forth in the remarks below, claims 1-5, 12, 27 and 28 are neither anticipated nor rendered obvious by Bando.

Claims 1-5, 12 and 28 were rejected under 35 U.S.C. §102(b) over Bando (U.S. Patent No. 5,265,565). This rejection is respectfully traversed.

Claim 1 recites a reciprocating engine comprising a first piston ring adjacent to a top surface of a piston defining a combustion chamber, a second piston ring which defines an annular gas chamber in cooperation with said first piston ring and which is adjacent to said first piston ring such that a pressure-receiving area of a side surface of said piston in said annular gas chamber becomes greater on a thrust side than on a counter-thrust side, and a plurality of gas passages which are disposed in an inner surface of a cylinder in such a manner as to be

juxtaposed in a circumferential direction of the inner surface of said cylinder and which allow said annular gas chamber to communicate with said combustion chamber on the thrust side, wherein said plurality of gas passages comprise a first recessed portion which is disposed in such a manner as to oppose a center portion of said piston concerning a direction which is perpendicular to both a reciprocating direction of said piston and an axial direction of a piston pin when said piston is at a top dead center or during a starting period of the fall from the top dead center, and a pair of second recessed portions, said first recessed portion being disposed between said pair of second recessed portions in said circumferential direction.

As disclosed, for example, in Fig. 3 of the instant application, the recessed portion 17b is disposed in such a manner as to oppose a center portion O of the piston 3 concerning a direction which is perpendicular to both a reciprocating direction Y (see, for example, Fig. 2) and an axial direction A of a piston pin 21 when the piston is at top dead center or during a starting period of the fall from the top dead center. As further shown, for example, in Fig. 3 of the instant application, the first recessed portion 17b is disposed between a pair of second recessed portions 17a, 17c in a circumferential direction X of the inner surface 14 of the cylinder 13.

The standard of anticipation under 35 U.S.C. §102(b) is identity of invention. In other words, the identical invention recited in the claim must be disclosed by the prior art. See M.P.E.P. 2131 which states:

“The identical invention must be shown in as complete detail as is contained in the ... claim.” Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).”

The Office Action cites column 9, last paragraph, of Bando as allegedly disclosing the features recited in claim 1. However, as disclosed in the last paragraph of column 9 of Bando, the concavity 41 may be disposed at any place in the inner surface 14 of the cylinder with respect

to the circumferential direction thereof. Bando further discloses that it is preferable that the concavity 41 is disposed on the inner surface 21 of the cylinder facing to the thrust side of the piston 2. Bando further discloses that alternatively more than one concavity or hole may be provided in the inner surface 14 of the cylinder at positions shifted to each other with respect to the circumferential direction and in a direction of reciprocation of the piston 2 or at the same position.

The disclosure in column 9, last paragraph, of Bando is insufficient to establish a *prima facie* case of anticipation against claim 1. Bando does not disclose that the concavity 41 is disposed in such a manner as to oppose a center portion of the piston concerning a direction perpendicular to both a reciprocating direction of the piston and an axial direction of the piston pin. In the alternative construction disclosed by Bando, i.e. the embodiment in which more than one concavity or hole may be provided, there is no disclosure by Bando that a first concavity or hole is disposed in such a manner to oppose a center portion of the piston concerning a direction perpendicular to both the reciprocating direction of the piston and the axial direction of the piston pin, or that such a first concavity or hole is disposed between a pair of second concavities in the circumferential direction. Accordingly, Bando does not anticipate claim 1.

Claims 2-5, 12, 27 and 28 recite additional features and are allowable for the same reasons discussed above with respect to claim 1 and for the additional features recited therein.

Reconsideration and withdrawal of the rejection of claims 1-5, 12, 27 and 28 under 35 U.S.C. §102(b) over Bando are respectfully requested.

Claims 1-5, 12, 18, 20, 23 and 26-28 were rejected under 35 U.S.C. §103(a) over Bando. The rejection is respectfully traversed.

The Office Action on page 3, lines 17-19, concludes “In addition, the location of the recesses would have been an obvious matter of design choice, since it has been held that rearranging parts of an invention involves only routine skill in the art.” The Office Action cites In re Japikse, 181 F2d 1019, 86 USPQ 70 (CCPA 1950) in support of this conclusion. Applicant respectfully disagrees.

M.P.E.P. 2144.04 states:

“If the facts in a prior legal decision are sufficiently similar to those in an application under examination, the examiner may use the rationale used by the court.”

It is respectfully submitted that the facts of In re Japikse are not sufficiently similar to the instant application to permit the Examiner to use the rationale used by the court. As discussed in M.P.E.P. §2144.04 VI. C., the claims at issue in In re Japikse were directed to a hydraulic power press which read on the prior art except with regard to the position of the starting switch. The claims were held unpatentable because shifting the position of the starting switch would not have modified the operation of the device.

In contrast to the facts of In re Japikse, it is respectfully submitted that rearranging the location of the concavity 41 of Bando would modify the operation of the reciprocating engine. As disclosed, for example, on page 25, lines 2-18, of the instant application, in the reciprocating engine 1, since the piston 3 is brought to the position where the combustion chamber 2 in the annular gas chamber 6 are communicated through the recessed portions 17a, 17b, 17c during the combustion, the gas pressure generated through combustion in the combustion chamber 2 is speedily introduced thoroughly into the annular gas chamber 6 through the recessed portions 17a, 17b, 17c. Upon receiving the biased pressure within the annular gas chamber 6, the piston 3 is gas-pressure supported at the inner surface 14, particularly at the portion on the thrust side 10 of

the inner surface 14, in its reciprocating motion. The piston 3 reciprocates with an extremely low sliding frictional resistance. In addition, in such reciprocating motion, although the piston 3 tends to be oscillated within the plane perpendicular to the axial direction A about the piston pin 21, this swinging motion is prevented by the aforementioned gas pressure of the annular gas chamber 6. The piston 3 can thus be reciprocated with an extremely low sliding frictional resistance, thereby making it possible to attain an improvement of the fuel consumption of the reciprocating engine 1.

As discussed above, the location of the recessed portions recited in claim 1 provide results which are neither disclosed nor suggested by Bando, including the last paragraph of column 9. Accordingly, Bando cannot render obvious claim 1.

With respect to the Examiner's reliance on the rationale used by the court in the case of In re Rose, 105 USPQ 237 (CCPA 1955), it is respectfully submitted that the facts of that case are not sufficiently similar to the instant application to permit the Examiner to rely on the rationale used by the court.

Claims 2-5, 12, 18, 20, 23 and 26-28 recite additional features and are allowable for the same reasons discussed above with respect to claim 1 and for the additional features recited therein.

Reconsideration and withdrawal of the rejection of claims 1-5, 12, 18, 20, 23 and 26-28 are respectfully requested.

In view of the above amendments and remarks, Applicant respectfully submits that all the claims are patentable and that the entire application is in condition for allowance.

BANDO
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Should the Examiner believe that anything further is desirable to place the application in better condition for allowance, she is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: /John P. Darling/
 John P. Darling
 Reg. No. 44,482

JPD:tlm
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100